

---

## **Rule DAS154:      WORST QUEUING WAS PROBABLY CAUSED BY A SINGLE APPLICATION**

---

**Finding:** CPEXpert determined that IOSQ was the major cause of delay in DASD response for the device, during the measurement interval with the worst I/O response. Less than half of the I/O queuing to the device was explained using a queuing model. Consequently, CPEXpert believes that the queuing probably was caused by a single application, rather than by independent applications.

**Impact:** This finding may have a MEDIUM IMPACT or HIGH IMPACT on the performance of the device. If the finding is correct, then actions directed to the specific application could result in significant performance improvements.

**Logic flow:** The following rules cause this rule to be invoked:  
DAS100: Volume with the worst overall performance  
DAS150: Seeking was the major cause of response delay

**Discussion:** CPEXpert uses a M/M/1 queuing model to calculate an estimated queue time for the measurement interval with the worst I/O response for the device being analyzed. The underlying assumptions of the model are exponential interarrival times, exponential service distributions, and an infinite population. If device activity occurs in this way, the queuing model can predict the expected queuing delays.

If the queuing delay as measured by RMF is significantly different from the estimated delay from the model, it would be clear that the activity did not occur in a random fashion, and most likely the cause of the difference would be that the interarrival times are not randomly distributed.

This was the case with the volume being analyzed. Consequently, CPEXpert concludes that the activity was caused by a single application accessing the device. Note that there could be more than one application accessing the device, but if their access patterns were not random with respect to each other, then this conclusion would still be valid.

**Suggestion:** The most improvement for this pack would likely result from (1) separating the files to different packs, (2) rearranging the files within the pack, (3) tuning the file structure (for example, compressing a shared partitioned data set (PDS), or (4) examining the application doing most of the I/O.

---

The actions to be taken when this rule is produced are the same associated with RULE DAS152. Please refer to that rule for further suggestions.